Trees...

Chinese Elms Mutilated By Ice—Amarillo, Texas

THE SHADE TREE EXPERT REFLECTS—*R. R. Fenska*

FASTIGIATE FORMS OF TREES—*M. A. Milne and Jacob Gerling*

Jan.-Feb., 1941 SOUTHERN SHADE TREE CONFERENCE ISSUE 25 Cents

Combat Chlorosis with
GAVIOTA TRE-TONIC

Chlorosis is a serious affliction of shade, street and ornamental trees. Chlorosis in many cases is caused by a food deficiency. Gaviota **Tre-Tonic** is compounded as follows: 20% of the minor elements usually absent in Chlorotic conditions and 80% of a 6-10-6 combination.

■

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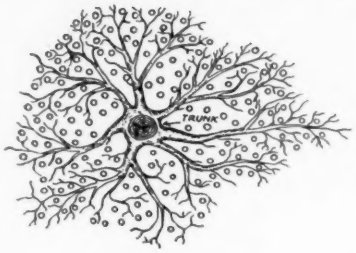

Diagram of root system

(1) *Diagram showing method of supplying Gaviota* TRE-TONIC *to Chlorotic trees. This method is advocated by leading Arboricultural authorities. Average dosage is computed at 5 lbs. of Gaviota* TRE-TONIC *to each inch of trunk diameter for trees over 6 in. For trees under 6 in. cut dosage 50%. Punch holes with bar or augur at the points indicated in the diagram by small circles.*

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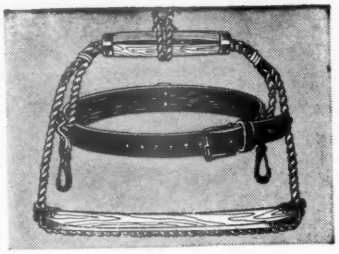

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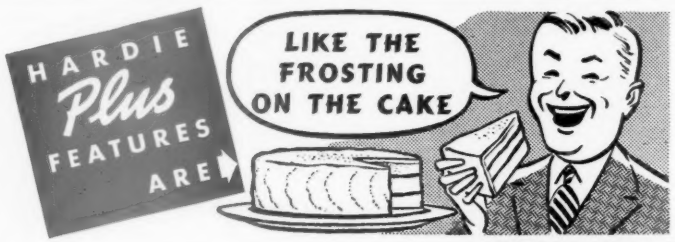

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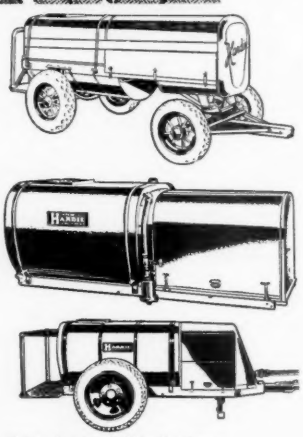

Write for 1941 Hardie Catalog showing over 40 sizes and styles of engine-equipped portables, Tractor Trailers, motor truck mounted and stationary sprayers.

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TREES Magazine is a bi-monthly Journal published at Santa Monica, California, by the Scanlon Publishing Company, and is devoted to the technical and business administration of Trees (Street and Ornamental); Parks (Municipal and National); and Forests (State, National and Private), in the U. S. Editorial and Business Address, 114 Santa Monica Boulevard, P. O. Box 886, Santa Monica, California. Telephone 54827. Subscription by mail, $1 per year. Advertising rates upon inquiry. Unsolicited manuscripts must be accompanied by postage return.

ALONG THE WAY

With . . .
EDW. SCANLON

■ Do you know of a PARK WHERE ONLY ONE SPECIES OF TREE and its variations, or a SINGLE GENUS OF TREES, has been used? Not a bad idea if it's original.

* * *

■ A letter from "HASTILY, BOB" Weakley is a rare collector's piece—about as rare as "A MESSAGE TO GARCIA." He's getting FROST-BITTEN IN FLORIDA while planning the FOURTH SOUTHERN SHADE TREE CONFERENCE — between fishing trips. Tough!

* * *

■ *BILL SPEED, thou art blessed for your facetious build-up toward getting the NATIONAL SHADE TREE CONFERENCE to the Golden West. I didn't say anything about holding it at SEQUOIA NATIONAL PARK—I'm going to go provincial and say SANTA MONICA, "WHERE THE MOUNTAINS MEET THE SEA"—that oughta gettem, eh Bill?*

* * *

■ Have a picture of a beautiful pyramidal-shaped Sugar Maple (*Acer saccharum*) sent in by WARREN F. HALE, ASST. STATE FORESTER OF NEW HAMPSHIRE. It is a beautiful thing, occurring in an isolated place, AND SHOULD BE PROPAGATED FOR STREET USE. W. F. has promised another pic of the tree in the dormant stage; then we'll show you.

* * *

■ *"AMERICA, LOVE IT OR LEAVE IT," is the very terse advice appearing on the envelope of a letter received from A. D. BARNES, SUPT. OF DADE COUNTY PARKS, FLORIDA. Another good one—a companion to "SEE AMERICA FIRST"—might be "HELP AMERICA FIRST."*

* * *

■ FRANK KARPICK, ASST. CITY FORESTER AT BUFFALO, N. Y., is having "starling" trouble. Does anyone have an idea how to get rid of these things, short of gunnery?

* * *

■ *I understand CHARLIE CRAWFORD of TOLEDO got banged around by a "motormaniac" several months ago. How you doing, Charlie? Let's hear from you.*

* * *

■ Was much interested in the paper FRED EATON, CITY FORESTER OF NEW HAVEN, gave at the annual meeting of the N. J. FEDERATION OF SHADE TREE COMMISSIONS last December on "Fastigiate Trees." These columnar varieties have a great future for progressive park men and city foresters. You'll find the beginning of a wonderful series on this type tree in this issue. MALCOLM MILNE, CITY FORESTER, and JACOB GERLING, ASST. SUPT. OF PARKS, ROCHESTER, N. Y., are the boys who are responsible for this swell job. B. H. SLAVIN, SUPT. OF PARKS AT ROCHESTER, is credited with finding and propagating a great many of these valuable varieties.

* * *

Cover picture—see page 7.

■ *Many thanks to GUY E. YERKES of the BELTSVILLE, MD., U. S. HORTICULTURAL STATION, for four husky Quercus robur fastigiata seedlings. They will get a good trial in California. Gave one to BILL NICHOLAS, SUPT. OF PARKS AT PASADENA; GILBERT L. SKUTT, SUPT. OF PARKS, LOS ANGELES; DANA BOWERS, STATE HIGHWAY LANDSCAPE ENGINEER, and kept one myself—kinda selfish, huh!*

* * *

■ THANKS FOR THE MANY, MANY LETTERS in response to my appeal for more cooperation. Your help is deeply gratifying and I'm looking forward to better and better issues of "TREES."

* * *

■ *Let's all get behind the NATIONAL SHADE TREE CONFERENCE effort—whether you are a member or not—TO SECURE AN APPROPRIATION FOR RESEARCH ON THE SUBJECT OF TREE THERAPEUTICS (see last issue of "TREES" page 11). It will be an important milestone in the advancement of Arboriculture. Get your pen out NOW and write your Congressman and Senators asking them to speak to their respective AGRICULTURAL APPROPRIATIONS COMMITTEES about it. Don't fail—this is important! LET'S PUT SOMETHING OVER.*

* * *

■ Heard of a pretty good idea on the radio t'other eve. It concerned the ESTABLISHMENT OF EMERGENCY LANDING STRIPS FOR AIRPLANES along main state highways. They could be 80 ft. by 1000 ft., bladed level. STATE LANDSCAPE ENGINEERS might STEAL A MARCH on their engineer bosses by broaching the subject—or maybe include such advancements in future landscape plans. Not bad!

* * *

■ *What a grand guy "UNCLE SHYLOCK" is now!*

* * *

■ Received a box of the foliage of *Franklinia Altamaha* from CHARLES F. JENKINS of the HEMLOCK ARBORETUM. Very beautiful in its fall dress. Should be more widely used. THE FALL FLOWERING HABIT IS RARE.

* * *

■ *Isn't it funny—in time of peace our legislators can see no connection between European troubles and our problems and therefore PASS BILLS TO PROTECT AMERICA. Comes war and the propaganda mill begins to grind—they make the cause (?) look so holy that if you ADVOCATE UPHOLDING THE LAWS OF THE UNITED STATES you are called a FIFTH COLUMNIST.*

* * *

■ BILL NICHOLAS, PARK SUPT. OF PASADENA, has much of the NEW YEAR'S ROSE BOWL detail to work out. Actually, roses are planted around the Rose Bowl, and Bill said that this past January 1, the varieties that looked best were DAME EDITH HELEN, CATALONIA, PRESIDENT H. HOOVER, McGREDY'S SCARLET and YELLOW. The blossom period would have hit right on the nose, but for a hot spell three weeks before New Year's.

* * *

■ *By the way—A HAPPY AND PROSPEROUS NEW YEAR!*

* * *

■ "SURE-FIRE" LOUIS DINSMORE, UNIVERSITY CITY, MO., has just come through with an "interesting letter. "A. W." is stringing along with "YOU KNOW WHAT I MEAN."

* * *

■ For your information, you will receive SIX ISSUES OF TREES IN 1941, starting with this issue.

It's going to be a job, but we have faith that the READERS WILL WANT TREES AND WILL HELP IN EVERY WAY.

"SAVE THAT TREE"
Use THE NEW
DAVIS TREE-TYE
Soft, durable rubber, reinforced with double-strength wove fabric protects life arteries of your trees. All lengths and wire sizes. Practical for trees and shrubs, neat, ECONOMICAL — use many times. Write Garden Equipment Headquarters'.
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January-February, 1941 BI-MONTHLY Volume 4 — No. 1

EDWARD H. SCANLON, Editor
Editorial Office: 114 Santa Monica Boulevard, Santa Monica, California

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; *a country without trees is hopeless*"

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CORDIALLY YOURS

Six Issues of "Trees"

Starting with this issue TREES will go on a bimonthly schedule. At least the attempt will be made—it will require the cooperation of readers who want TREES. This help can be expressed by active support of the advertisers, who believe in TREES and support it with their advertising.

The next two or three years should be years of great activity in America. There will be a tremendous increase in business generally. This will naturally be reflected in the field of Tree Preservation, the nursery business and, unquestionably, in the expansion of municipal park budgets. With this prospect in view, there will be a heavy demand for quality goods, tools and equipment. The advertisers in TREES are all concerns of fine repute and your purchase of their products will help to firmly establish this long-needed publication devoted to the care of trees.

We will appreciate your further cooperation and action. Best Wishes for a Happy and Prosperous New Year!

AGAIN—TREE EXPERT LAWS—

We hope that Arborists around the nation will not permit the opportunity to pass that has been afforded by the passage of the "Certified Tree Expert" law in New Jersey.

It is the experience of *"Trees,"* in an attempt to secure passage of a like bill in California, that legislators are impressed with precedent. The lack of any such state laws greatly hampered California Arborists, however it is hoped they will make the attempt again this year when their chances will be greatly enhanced.

The need for such bills in all states supporting a great amount of Tree Preservation work cannot be too strongly urged. The benefits not only redound to commercial Arborists, but would greatly increase the efficiency of municipal tree care and that of other political subdivisions.

Arborists have a splendid opportunity with this opening created, of strongly fortifying the standing of the profession. The National and Western Shade Tree Conferences and the American Institute of Park Executives should supply the necessary leadership. It is their obligation and duty.

Movement Launched to Locate Largest Trees of United States

Discovery and Preservation of Largest Remaining Specimens of American Trees Sought by the American Forestry Association

The tree aristocrats of America—the largest remaining specimens of important species—are being sought in a nation-wide movement just launched by the American Forestry Association. Forest and field, highways and city streets, parks, estates and back yards the country over are to be searched for the largest oaks, pines, elms, sycamores, maples, hemlocks and other members of important American tree families. It is hoped to discover the nation's largest specimens of more than two hundred different kinds of trees.

The movement has for its ultimate objective, according to the Association, the preservation of these giants of the tree world. It is pointed out that such a conservation activity will have incalculable benefits, not only in stimulating greater public interest in and appreciation of trees, but in establishing a national laboratory for tree and forestry studies by this and future generations.

The giants that we need to discover and save for this and other generations are not necessarily the great sequoias of the West, nor the historic trees so closely associated with famous events and personalities. Such trees are in the main well known and protected. The great specimens we need to discover and preserve are the giants scattered throughout forest and field, along our roadways and city streets, on our estates, or even in our back yards—trees which, by virtue of their size alone, deserve recognition and preservation.

Citizens everywhere are asked by the Association to join with landowners, lumbermen, foresters, conservationists, and with national, state and local forest agencies in reporting the location, ownership and measurements of unusually large trees. The measurements desired are the circumference of the tree, four and a half feet above the ground, its estimated height, and the spread of its branches. Photographs of the giants are also desired. This information, along with photographs, should be sent to the national headquarters of the American Forestry Association, 919 17th street, Northwest, Washington, D. C.

The BEAN-CUTLER Division of Food Machinery Corporation has recently issued a completely new catalog which illustrates and describes the entire BEAN line of Crop and Orchard Sprayers and Dusting Machines.

This catalog describes in detail the various BEAN Sprayer models and explains in both picture and text the design, construction and operation of the BEAN Royal Pump. It is a book that any arborist will find exceedingly interesting, and a copy may be had without cost by addressing the BEAN-CUTLER Division, Food Machinery Corporation, San Jose, Calif., or by calling at any of the factory branches located in Portland, Ore., Los Angeles, Calif., Wenatchee, Wash., Yakima, Wash., and Lansing, Mich.

Diagnosis Clinic to Feature Western Conference in San Jose

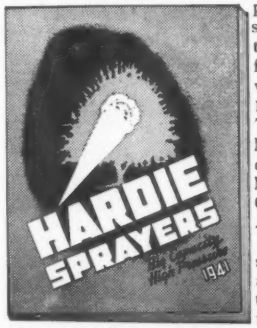
Beautiful San Jose, Calif., will be the scene of the Eighth Western Shade Tree Conference, May 25, 26, 27, 1941.

The feature of this year's conference, according to Ray Hartman, President, and Michael Antonacci, Local Chairman, will be the Tree Diagnosis Clinic. L. C. Maynard, San Jose Park Superintendent, is to pick a tree that is in a debilitated condition. A diagnosis will be made by scientists and arborists present; they will prescribe a program of treatment which the Park Department will follow for the coming year and make a report on results at the Ninth Conference.

This will be one of the finest conferences in the series and all persons interested in Tree Preservation should make plans to attend.

HARDIE '41 CATALOG

Those who spray shade and ornamental trees will find many important advancements in sprayer engineering, providing valuable improvements in sprayer construction and performance, revealed in the 1941 Catalog of The Hardie Mfg. Company of Hudson, Mich., Portland, Ore., and Los Angeles, Calif.



Steel tanks are standard now on all Hardie Tractor Trailer outfits. The complete streamlining of the 1941 models provides an absolutely sheer surface over the entire exterior from nose to rear platform. Pump and engine are enclosed and protected by a steel dust hood that joins the steel tank with perfectly smooth joints, eliminating all uneven surfaces.

A new heavy duty shade tree gun is featured in the catalog. The new shade tree gun is equipped with a heavy bronze, leak-proof, lever-action, quick cut-off easily operated with one hand. A resting foot supports the big gun on the ground while in use. It puts a solid stream far up which breaks and drenches the tops of the tallest trees.

MEXICO GARDEN TOUR

On February 18 the S. S. America will leave San Francisco for a two-weeks' tour of west and east coast Mexican gardens. Conducting the tour will be Reinhold von Wetter. Von is a Western Shade Tree Conference member and extends an invitation to all National and Western Conference members, Park group members, and others to make this trip. For details write Von at the H. C. Capwell Travel Service, Broadway at 20th, Oakland, Calif.

ODDITREES

THE BEARHEAD TREE

A note of interest in connection with the accompanying picture is told by Hollis J. Howe, City Forester of Baltimore. The tree, a Black Oak (*Quercus velutina*), stands on the estate of Johns Hopkins, founder of the famous hospital and university that bear his name.

Courtesy H. J. Howe, City Forester, Baltimore, Md.

The estate is now Clifton Park and is maintained by the Baltimore Park Department.

The burl has grown into a very interesting mal-formation, forming a very striking resemblance to a bear head.

TREE-TYE SAMPLES

M. F. Colgrove, new manager of the John Bean Mfg. Company, located at 333 East 3rd St., Los Angeles, is launching a strong campaign to acquaint city park departments, nurserymen and other tree planters with the splendid possibilities of the Davis Tree-Tye. A sample will be sent upon request.

Joaquin Miller Park Glorified in Oakland Hills

By Edward H. Scanlon

Under the capable leadership of Ed Sanborn, Park Forester and Project Administrator for the City of Oakland, California, there has been quietly taking form in the Redwood and Eucalyptus covered hills that crown this lovely city on San Francisco Bay, one of the most magnificent park developments to be found in America.

This temple of caseading pools, native planting, colorful fountain of rainbow hues is surmounted by the massive concrete amphitheater wherein will be held pageants, symphonies, concerts that will one day make this $1,000,000 project one of the cultural centers of the west.

Begun in 1934, this beautiful work will require two more years for completion. Seen by night with the changing lights in the series of pools, it is a never-to-be-forgotten sight. The electrical and pumping equipment necessary for the changing panorama of color and spray looks like the inside of a huge powerhouse and is far too complicated to be described by the uninitiated.

Years ago, Joaquin Miller, "The Poet of the Sierras," conceived such an embellishment of the hills he loved so dearly and where he spent so many years of his life. In fact, his home, a few hundred feet below the main pool, has been completely restored, even to the arrangement he had for producing artificial rainstorms on the tin roof. This furnished his inspiration.

Four of the pools have underwater lighting units totaling 58. The per hour consumption of electricity for complete operation of water and light is 25,600 watts and the cost is fifty-six cents per hour.

The placing of thousands of huge boulders was a great problem, but the effect created makes this truly one of the most fascinating accomplishments in American park development.

Woodminster Amphitheater in Joaquin Miller Park **Courtesy Oakland Park Dept.**

Fourth Southern Meet in Gainesville

The following program that will feature the 4th Annual meeting of the Southern Shade Tree Conference promises a mighty valuable and entertaining three days in Gainesville, Fla., on February 20-22.

Gomer D. Evans, of Birmingham, Ala., the local chairman, has all the details ironed out and in company with President Bob Weakley and Secretary Harold S. Newins, extends an urgent and cordial welcome to Arborists, Park Superintendents, Nurserymen and others to drop everything and held build this fine institution for southern arboriculture.

OFFICERS

President, R. M. Weakley, West Palm Beach, Florida
Vice-President: T. M. Francis, Birmingham, Alabama
Secretary-Treasurer: H. S. Newins, Gainesville, Florida
Local Chairman: G. D. Evans, Birmingham, Alabama

THURSDAY, FEBRUARY 20

Morning

8 to 12 Registration: Hotel Thomas
A Full Morning with the Exhibitors
12:00 Lunch at Hotel Thomas

Afternoon

University of Florida
1:30 Conference Called to Order
Address of Welcome: Dr. J. J. Tigert, President of the Univ. of Florida
Response: R. M. Weakley, President of the So. Shade Tree Conference
2:00 Roadside Development in Florida: Dean H. Harold Hume, College of Agriculture, Univ. of Florida
2:15 Control of the Holly Leaf Miner: E. N. Cory, Dept. of Ent., Univ. of Maryland, College Park, Md.
2:30 Diseases of Southern Oaks: Dr. W. B. Tisdale, Dept. of Bot., Univ. of Florida
2:45 Distribution of Tree Roots in Relationship to Fertilizer Application: L. C. Chadwick, Dept. of Hort., Ohio State Univ., Columbus, Ohio
3:00 Rusts of Southern Pines: Dr. George F. Weber, Prof. of Forest Path., Univ. of Florida
3:15 Tree Value in Roadside Development: Karl Dressel, Asst. Prof. of Forestry, Mich. State College, East Lansing, Mich.
3:30 Diseases of the Palm Trees: Erdman West, Mycologist, Agri. Exp. Sta., Univ. of Florida
3:45 Callous Formation of Tree Wound Dressing: Paul E. Tilford, Ohio Agri. Exp. Sta., Wooster, Ohio
4:00 Control of the "Little Leaf Disease" of the Shortleaf Pine: Dr. G. H. Heeting, Path., Div. of Forest Path., Ashville, North Carolina
4:15 A New Bug on the Judas Tree: H. J. Howe, City Forester, Baltimore, Md.

(*Continued on page* 13)

The Shade Tree Expert Reflects

By R. R. Fenska

Secretary, Westchester County (N. Y.) Tree Protective Association

The work of the shade tree expert is both an art and a science. The art of salesmanship controls the size of his income while his scientific knowledge determines the condition of the trees under his supervision.

Some tree experts do their work on a scientific basis but have barely enough income to subsist on. Others merely practice the art of salesmanship and live bountifully, not withstanding the fact that the trees they are supposed to care for never appear thrifty.

It is evident that a combination of sales ability and scientific knowledge is essential for the well-being of the trees and the tree expert.

There is an art in nearly everything that we do. The tree expert who masters the art of conversing, teaching and pleasing others is acceptable to his clients. Doing business with him is a satisfying pleasure. Every tree expert must strive to develop this side of his profession. It is as important towards his success as scientific training in shade tree care.

The other half of the profession of the shade tree expert includes a knowledge and familiarity with scientific tree care in all of its ramifications. With such knowledge he automatically acquires confidence in himself and a respect for his profession. To achieve a high place in public esteem it is necessary that he know as much as the best of his contemporaries.

As a student at the Yale Forestry School the writer took a course in what was then termed "City Forestry." It included spraying, pruning and cavity work as it was then practiced by city foresters, with a smattering of landscape forestry.

The few positions as city forester at that time were so tied up with politics that the work was looked upon askance by the average forester. Finally the course in city forestry was discontinued at Yale chiefly because of lack of interest by the students; which in turn was based on the uncertain future along this line. The writer now feels that the foresters failed to sell themselves to the public in their ability to care for shade and ornamental trees. They had the scientific knowledge but lacked the art of salesmanship.

In recent years through the work of the commercial tree expert companies the private owner of shade trees has been gradually made conscious of the value of his trees. He has also been taught by these organizations that *trees growing under city conditions will not thrive or even survive long without the help of man.* This favorable response of the private shade tree owner has resulted in a mushroom growth of so-called "tree-experts" whose chief asset has been salesmanship, with little or no scientific knowledge of tree care. Such mushroom growth has been found in the early or "pioneer" stage of every profession and was inevitable with the development of the work of the arborist, or shade tree expert. There is evidence that this type of "tree-expert" is gradually fading from serious competition as the real experts continue to do their work on a scientific basis.

The certified tree expert law recently enacted by the state of New Jersey is a step in the right direction, although it is not a panacea for all the ills in the shade tree profession.

Recently the foresters, as well as some forestry schools, have taken cognizance of the fact that there is a definite and legitimate field for the work of the shade tree expert. The head of one of the forestry schools a short time ago submitted to the writer a four year course aimed to prepare the graduate for the work of the arborist, or shade tree expert. This is significant since it indicates unmistakably that our work is being recognized as a profession.

A graduate from such a course, however, will have learned only half of his job. He must still get his practical experience in the art of salesmanship. This he cannot be taught successfully except in the "University of Hard Knocks." A successful salesman may write a book on the art of selling but he himself will admit that reading his book is a poor substitute for the actual experience in meeting people and selling them a service.

It is the opinion of many tree experts that men with a forestry training have a good background for the profession of tree expert, especially if their courses in school have been selected with this object in mind. They will avoid many mistakes when they try to diagnose tree trouble which the practical "tree-surgeon" has made. The selling end of the profession, however, can be acquired only through actual selling experience, followed up with such "sales institutes" as have been conducted by the better organized tree expert companies today. These companies train their new representatives through a series of lectures and assigned readings to give them the fundamentals of the business. To send out mere "salesmen" who know little or nothing about the technical side of tree care is hardly fair to a company or the men who have given our profession a favorable reputation with the public.

Now that our work is being recognized by the foresters, educational institutions and the general public, let us strive to justify this recognition by keeping our work on a high plane. Let us select and send out men to represent our profession who are qualified to speak with authority on shade tree care.

Amarillo Storm Ruins Trees

A short time ago, TREES received the details of the devastating rain, snow and windstorm that enveloped the City of Amarillo, Texas. According to our friend, C. H. Fitz, City Forester, the storm commenced November 3, 1940, and continued for two days.

Some idea of the destruction wrought may be obtained from the picture on the cover. This picture, taken at Washington and 13th streets, was a fine street of Chinese Elms (*Ulmus pumila*).

Mr. Fitz estimates the damage to street and park trees at $100,000, and that to private owned trees beyond computation. The debris when collected from the entire city and piled, covered an area of about one hundred acres. It seems no particular species was able to resist the crushing load of ice, although Mr. Fitz states that on the evening of the first day he had hopes that the American Elms in Elwood Park would come through; however, his hopes were dashed when, the next morning, he returned to find they too succumbed to nature's "blitzkrieg."

Mr. Fitz has promised pictures of the pruning job now under way, which we hope to run later.

Trees...

Elms Planted In America

By Donald Wyman
Arnold Arboretum of Harvard Univ.

PART II.

(*Continued from Oct.*, 1940, *issue*)

SPECIES NATIVE OF EUROPE AND ASIA

Two species are native of Europe and western Asia, and are used a great deal in the United States because of their good ornamental characters and their several horticultural forms.

The first is the smoothleaf elm (*U. carpinifolia*, formerly called *U. foliacea* or *U. nitens*). Being used to a great extent in this country, it is constantly confused with the English elm (*U. procera* or *U. campestris*), from which it may be distinguished by its less deeply furrowed bark, mostly glabrous branchlets, longer and often obovate leaves which are lustrous and usually smooth on the upper surface with petioles from ¼ to ½ inch long. Unfortunately, the seeds of this tree have been sold for years by European seedsmen as *U. campestris;* consequently, the resulting confusion in this country has been inevitable.

The smoothleaf elm, which may reach a height of 90 feet, is quite variable in habit of growth, there being many horticultural forms, some of which are available from nurseries in this country. This tree usually is pyramidal in outline, having a single trunk and somewhat ascending branches, although sometimes the branches may be pendulous and the head more or less rounded. In the south of England, it is often referred to as the Herfordshire elm, and grows with a broad head and rather pendulous branches—surpassed in beauty only by the American elm as it grows in New England. The pendulous branched form (*pendula*) has been offered by American nurseries. An unusual variety is *webbiana*, of little horticultural value because, even though the tree is narrow and pyramidal with ascending branches, the leaves are folded longitudinally, giving the appearance of wilting. Another form, *variegata*, has its leaves blotched with two shades of green and with white; and though not particularly desirable, it is of interest to those who like to use trees with variegated leaves.

Eight other varieties of the smoothleaf elm have horticultural significance, six of them being offered in American nurseries. The Cornish elm (*cornubiensis*) and the Wheatley elm (*sarniensis*, incorrectly called *wheatleyi*), also known as the Guernsey or Jersey elm, are both narrow, pyramidal trees with dense, erect branches. The Wheatley elm, almost columnar in habit, has a slightly broader head and wider leaves than the Cornish elm, with branches more stiffly erect. The variety *dampieri* is a fastigiate tree with a very narrow, pyramidal crown and deeply double-toothed leaves; *wredi* is very similar but its leaves are yellowish. Another variety, named *suberosa*, is little more than a dense shrub, irregularly cylindrical in outline, the young sucker branches of which frequently develop opposite corky wings. Somewhat similar to *suberosa* is the variety *propendens*, the branches of which are pendulous, however, and its leaves are very small, only being about one inch long. An outstanding elm was sent to Germany from Persia in 1878 and has since been named variety *umbraculifera*. This is a dense growing, small tree with a globose, or sometimes flat, top and erect branches. Closely associated to it is the variety *koopmanni*, which is definitely more globose in outline but just as dense. Trees of these two varieties in the collection of the Arnold Arboretum are well clothed to the ground with branches.

Globe Elm (*U. carpinifolia umbraculifera*)

Russian Elm (*U. laevis*)

Photos Courtesy Arnold Arboretum

These unusual forms are not to be desired in preference to other trees and shrubs in the landscape, but they do have a definite use. Sometimes there is a place in a large planted area for a small tree with a definite outline — something which does not require constant pruning to keep its shape. These varieties of the smoothleaf elm supply just such an accent point. Indiscriminate use of these trees, however, should be guarded against.

The other elm species which is also native of Europe as well as certain parts of western Asia is the Scotch, or Wych, elm, *U. glabra*, sometimes incorrectly called *U. montana* or *U. scabra*. This tree, with wide-spreading branches and often flat-topped head, is used considerably in America as an ornamental. The dark green leaves, sometimes with two or three points near the apex, are broader beyond the middle, very rough above, and downy underneath. The petioles are about ⅛ inch long. Unlike many of the other elms, this one does not produce suckers; and, on account of this good trait, it has been used much as an understock in grafting. Unfortunately, it is one of the first elms sought out by the elm leaf beetle, and in locations where there are several varieties, the beetle does

(*Continued on page* 14)

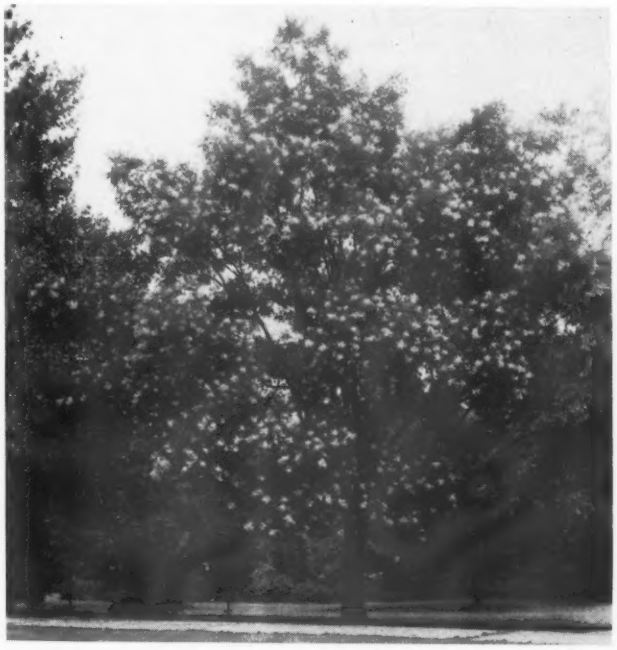
Japan Pagoda-tree

(*Sophora japonica*)

By L. C. CHADWICK

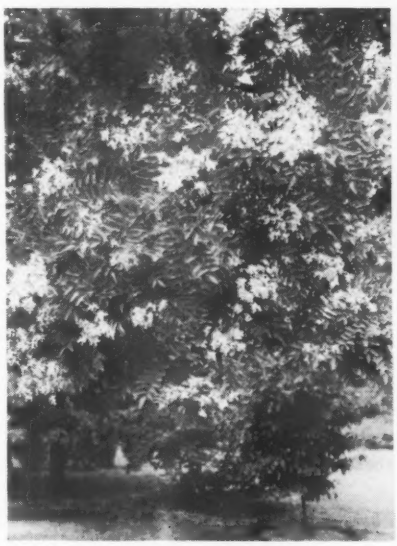
Dept. Horticulture, Ohio State Univ., Columbus, Ohio

Sophora japonica, the Japan Pagoda-tree or the Chinese Scholar-tree as it is sometimes called, is a native of China and Korea and was introduced in 1747. Even though it has long been known in cultivation, it is not commonly found in ornamental planting in this country. Said to obtain a height of 80 feet at maturity, it is seldom seen much more than half this height. The wide-spreading, greenish branches forming a rounded head are characteristic features of the plant.



Mature specimen of Sophora japonica in full bloom
Photos courtesy H. J. Hohman, Kingsville Nurseries, Kingsville, Md.

The leaves are compound, 6 to 10 inches long, and arranged alternately on the stem. The individual leaflets are relatively small, one to two inches in length, dark glossy green above and somewhat glaucous beneath. The small leaflets cast a light shade, allowing the ready growth of grass beneath the tree. The leaves persist well into late fall.



Flower and foliage of species

The pea-shaped flowers are creamy white, only occasionally pinkish, and are produced in terminal clusters, 6 to 12 inches long in August or early September. The flowers are followed by a green pod, two to three and one-half inches long, and containing one to six seeds. The pod is constricted between the seeds.

The Japan Pagoda-tree is adaptable to a wide range of conditions. It will do well in average soil and where subjected to drought and city conditions. One authority states that it needs plenty of water when grown in California. Insects and diseases seldom trouble it. Objections that have been raised concerning this plant are that it is late coming into bloom, that it is of slow growth and difficult to transplant. The first criticism appears to be true but I have found that seedlings given good soil develop rapidly and if root pruned occasionally are not difficult to transplant.

The species can and should be used more as a street tree and as a lawn tree. It is satisfactory for both uses, and is hardy, standing temperatures of 20 below zero without injury. Propagation of the species is usually accomplished by seeds. The varieties are obtained by grafting, using the species as stocks.

A number of varieties of *Sophora japonica* are listed but only two are at all common. *Sophora japonica pendula* is a small tree with twisted, pendulous limbs. It may be used where a small weeping tree is needed. *Sophora japonica columnaris* is described as a narrow, pyramidal tree.

Foliage of the variety pendula, showing the weeping habit

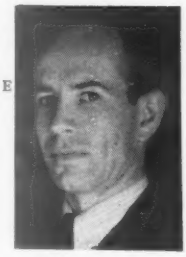
AMERICAN FORESTRY

With land use as its keynote, the American Forestry Association has scheduled its 66th Annual meeting to be held at Los Angeles, April 15, 16, 17, 1941. This will be the first time the Association has held its annual conference in the West.

Trees...

Fastigiate Forms of Trees and Their Uses

By
MALCOLM A. MILNE
City Forester
Rochester, N. Y.



and

JACOB GERLING
(*collaborator*)
Asst. Supt. of Parks
Rochester, N. Y.

EDITOR'S NOTE: *In this issue we begin this splendid series of discussions on the use of fastigiate forms for street use. The series describes twelve varieties and will be run throughout the year. The authors and the editor will welcome comments from various parts of the country regarding experiences with this form of tree. The series was prompted by the multitude of uses for this form and also because of the many disadvantages attendant to the use of the commonly used Lombardy Poplar.*

General Discussion

The purpose of these articles is to describe and encourage wider use of some of the better adapted forms of desirable species, many of which are being propogated and used to advantage by the authors.

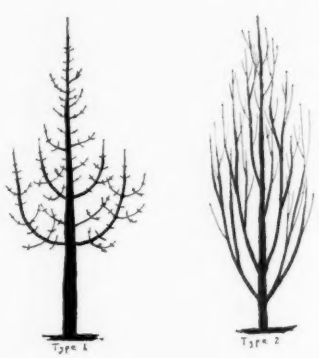
Few features of landscaping are as important as the selection and placing of trees used to form the permanent framework or background for horticultural development. Too often but little care is given to insure proper planting, which results in poorly chosen species and misplaced varieties. There is little doubt that wider familiarity with the many varieties of excellent trees which grow well would result in fewer instances where plantings bring about undesirable conditions. Most of us live on residential streets and regardless of how much effort we give to the improvement of our individual dooryards, incongruous plantings of misfit street trees can do much to detract from the beauty of our neighborhood. After all, the street we live on forms the approach to our homes and is certainly worthy of consideration as to its proper tree arrangement. Many property owners have planted trees which, as they begin to reach the full beauty of maturity, must be removed for lack of space in which to grow.

Fastigiate, or upright forms of trees have been grown and used for a number of years. Heretofore, their use has been confined primarily to landscaping where a formal effect is desired, such as a background or balanced side planting for statuary, or to create the illusion of distance along the main axis of a formal design. They have also been employed as a windbreak and for screen planting.

We are all familiar with the common use of the upright forms of evergreens in foundation planting. Such evergreens are in demand and are being grown for market by commercial nurseries as a matter of course. Much has been written concerning their botanical characteristics and uses. There is no need for further discussion here.

There has long been a crying need for fastigiate forms of deciduous trees, particularly for planting narrow streets and for use on small city lots. However, aside from the old familiar Lombardy Poplar and more recently the Bolleana Poplar, fastigiate forms have not been grown to a sufficient extent to allow their widespread use. As soon as it becomes generally known that such forms exist and may be propagated, and proof of their practicability becomes established, the demand will be followed by the supply. Some of the more forward-looking nurseries are beginning to grow these newer varieties of upright trees.

There are two main types of fastigiate trees as concerns growth habit. One is characterized by a strong, fast-growing terminal, with short, slow-growing, horizontal laterals (Type 1). The other is characterized by erect-growing laterals which form a close V or U with the main stem (Type 2). The latter type is by far the more common.



The lower branches of the trees of Type 1 may be removed for height without seriously detracting from their natural beauty. In growing varieties of Type 2 it is essential that low branching be encouraged and protected, as the beauty of the mature trees is largely dependent upon contour that is impossible unless the trees be well branched from a point close to the ground. There are a few exceptions to this which will be mentioned in the discussion of the individual varieties.

A fastigiate tree, because of its narrow, compact shape, is limited in total leaf-surface. This results in slow diameter growth of trunk and branches. Root development and crown development are balanced. However, height growth compares with that of the parent species.

Propagation

Development of upright varieties of trees is a relatively simple, although slow, process. Propagation is by cuttings, or budding or grafting onto seedlings of the parent species. Grafting operations require more time, skill and expense, and are therefore seldom employed for most varieties. Vegetative propagation is necessary, for seeds planted from a tree of upright tendencies may not produce a single tree having the same tendencies. The reason why a tree of any species should extend its branches upward in contradiction of its usual growth habit is unknown to the authors. Perhaps the geneticists can explain. At any rate, when such a tree is discovered, cuttings or bud wood, depending on the species, may be taken from it and upright trees grown. Better success may be expected if the cuttings or bud wood are taken from the upper portion of the tree where the upright tendency is generally more pronounced. Once trees are grown from the original tree of upright habit, successive propagation may be applied without depending on the original tree. Such propagation may even increase the fastigiate habit of growth.

It may be appropriate to mention here that vegetative propagation of either

species or varieties is the best way to produce uniformly shaped trees. Uniformity in street trees is particularly important. We are all familiar with the many and varied shapes that obtain in many species when grown from seed.

Uses

Tree varieties will never entirely replace the parent species for all landscape purposes. Each has a place according to the effect desired and the limitations existent, whether natural or artificial. Fastigiate varieties have a definite, and we believe, increasing usefulness in the following locations:

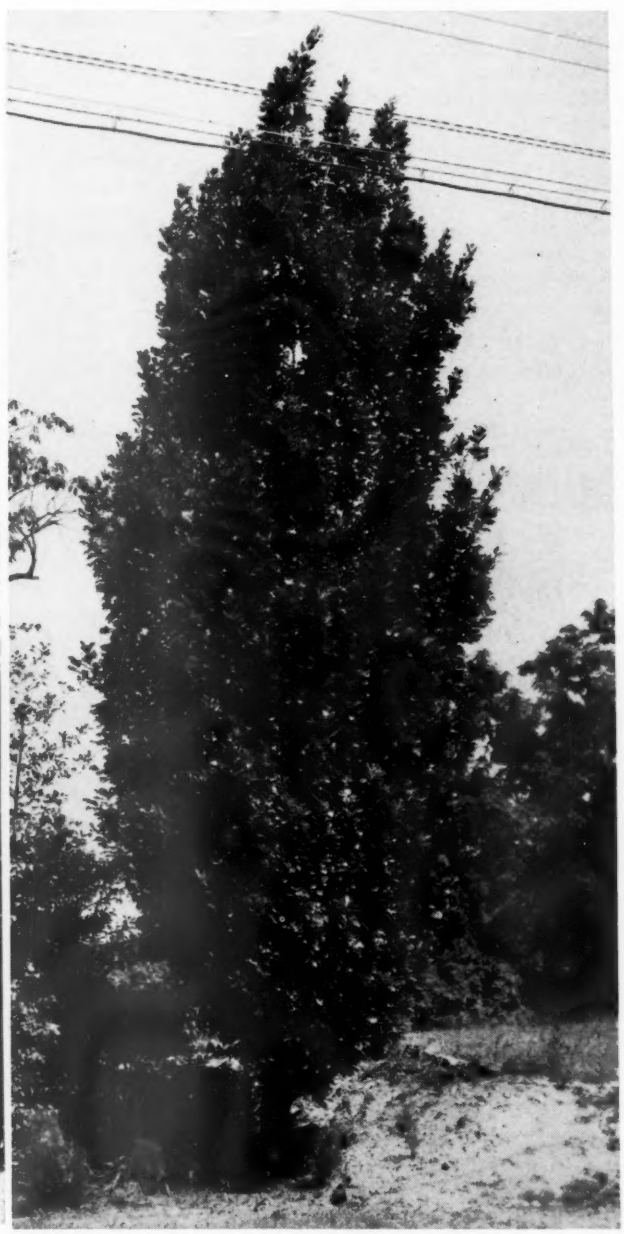
1. Narrow streets, streets having narrow parking spaces, and streets with the building line close to the sidewalk. Also streets having no parking space, where it may be desirable to plant trees between the sidewalk and building line. In these locations parent species may prove troublesome when mature. They also would have a crowded appearance and would be unable to develop natural crown form. In these locations the parent species may provide shade so dense that maintenance of lawns would be impossible.

2. Small city lots. A tree adds charm to any home. These upright forms are ideally suited to planting in small areas.

3. To break horizontal lines. The flatness of long horizontal lines, such as a driveway, may be broken by one or

(*Continued on next page*)

Type 1: *Upright American Linden* (*Tilia americana fastigiata*)
Photo courtesy Rochester, N. Y., Park Dept.



Type 2: *Upright English Oak* (*Q. robur fastigiata*)
Photo courtesy H. J. Howe, City Forester, Baltimore, Md.

Fastigiate Trees

(*Continued from page* 11)

more upright trees. Their narrow height adds the third dimension to an otherwise two-dimensional plan.

4. Formal locations such as bridge approaches, building entrances, etc. The formal shape of fastigiate trees is in harmony with formal construction.

5. Windbreaks and screens. Their form enables them to be planted very close together without interfering with their natural growth habit. Many oil companies use the Lombardy Poplar for screen planting around oil and gasoline storage tanks and to protect nearby residential property from fumes. The newer varieties of fastigiate trees would be equally appropriate and longer lived.

6. Specimen trees for parks, arboretums, estates, etc. The upright varieties are interesting from horticultural and esthetic viewpoint.

In addition to special uses, the upright varieties have the following advantages over the parent species:

1. *Lower maintenance cost.* The trees considered in this series are especially valued by the authors because they have supplied the answer to the question which haunts every city forester, especially in this day of restricted budgets —how can the maintenance cost of street trees be kept at the lowest possible level? Limited as we must be, by the choice of such trees as will thrive under the very often adverse growing conditions of urban centers, and choosing those having characteristics which best contribute to pleasing effects, we can never ignore the overhead of properly cared for plantings. Fastigiate trees hold their shape well and require no heavy trimming. A little pruning to "head back" faster-growing lateral branches or forked leaders may be necessary. With the exception of the initial costs of growing and planting, which compare favorably with those of the parent species, all other costs are lower.

2. *Less root development.* Trees generally maintain a balance between crown and root development. Because the total leaf surface of upright trees is comparatively small, the roots are smaller in diameter and less widespreading. This is an important consideration in planting *under crowded conditions where sidewalks,* curbing, driveways, sewers and underground conduits may be concerned.

3. *Less susceptible to damage from the elements.* The multiple, erect or short branches offer little resistance to wind and minimum leverage to sleet and snow. The strain is taken by the entire tree rather than by individual branches.

4. The trees may be planted closer together without interfering with natural crown development. In street tree planting it is good diplomacy to place a tree in front of each lot. Where the lots are less than forty feet in width the number of species for proper planting is very limited. These upright varieties are practical in such a situation.

5. *Less interference with street lighting.* Proper city planning requires both street trees and street lighting. Trees with widespreading crowns, particularly while young, may seriously interfere with street lighting. This undesirable condition may be minimized or eliminated by the use of fastigiate trees.

UPRIGHT ENGLISH OAK

(*Quercus robur fastigiata*)

The English Oak is a massive tree growing to a height of 120 feet with large, spreading branches. This tree has long been in cultivation and over 40 known varieties have been developed from it. One of the better known varieties is *Quercus robur fastigiata,* having a broadly columnar crown of striking beauty. Few areas could properly support the large trunk and spreading branches of the parent species, but in the fastigiate variety we have a tree well-suited for street and small lawn planting.

The leaves are short-petioled, oblong-obovate with shallow rounded lobes, glabrous, dark green above; pale bluish green beneath, and persist on the tree into the winter. They are two and one-half to four inches long, being generally smaller than those of the species.

This tree prefers a moist, well-drained, slightly acid, loam soil. Trees should be root pruned in the nursery to promote fibers and discourage large tap roots.

Propagation is by budding or grafting onto seedlings of the parent species or of a member of the white oak group. The growth is slow. This variety has been grown for a number of years, although it is by no means easy to obtain and the cost is high.

There are no truly serious pests of this tree known to the authors. The golden oak scale (*Asterolecanium variolosum*) may infest the young twigs. Control is by dormant spraying with a miscible oil.

Upright English Oak is an ideal tree for narrow streets or streets with the building line close to the sidewalk. Low branching should be encouraged insofar as practical in order to get a natural columnar growth from a point close to the ground to the top of the tree. For this reason a wider parking space is necessary than for some of the upright varieties which may be trimmed for height. This variety, interspaced with a tree of more spreading habit on a better residential street, would prove to be a planting of distinction and a feather in the cap of the person responsible. The long life span of this fastigiate tree would be a lasting monument to his effort.

The columnar shape of this upright variety makes it an excellent choice for formal approaches and entrances, and as a specimen or accent tree.

This tree is practically immune to the fury of the elements, being deep-rooted, strong and resilient.

A tree with all the fine attributes this one has certainly deserves a more widespread use than heretofore granted it.

At least two other upright varieties of English Oak are known. They are *fastigiata cupressoides,* with narrower leaves, and *fastigiata aureo-punctata,* with yellowish spotted leaves. These varieties are less common than the one described here.

UPRIGHT AMERICAN LINDEN

Tilia americana fastigiata (*Slavin*) *Rehd.*

The American Linden is well suited for ornamentation and is often used for street work. Its husky trunk gives pillar-like support to branches which divide and sub-divide into a thick spray of large, deep-green leaves. Reaching its best development in the Ohio Valley, the American Linden, with but little care, makes a broad, round-headed tree reaching a height of 100 feet in full maturity. This very satisfactory species offers a fine variety which fits in well on many sites. *Tilia americana fastigiata* nicely meets the requirements of narrow street improvement and restricted area planting. With the light, tough, non-splitting woody structure of the species, the fastigiate form suffers little from wind and sleet and requires a very small amount of attention when once established.

The leaves and bark are similar to

(*Continued on next page*)

Fastigiate Trees

(*Continued from preceding page*)

those of the parent species. It is multiple-branched, the branches leaving the trunk at a narrow angle, sweeping upward and outward, then inward towards the top of the tree to form a narrow pyramid.

This tree is not particular as to soil requirements, but, like all lindens, prefers a moist site.

Propagation is by grafting or budding onto seedlings of the parent species. The growth is rapid. Trees should be root-pruned in the nursery to encourage a compact, fibrous root system. Otherwise, large running roots with few fibers will make transplanting difficult. All lindens are subject to sun scald when removed from the shade of nursery rows to an open location and the trunks should be wrapped with burlap or the new paper wrap.

The same insect pests and diseases which attack the species may be expected to prove injurious to the variety, although trees fifteen to twenty-five years old have been quite free from injury in the Rochester area. The linden borer (*Saperda vestita*) mines the wood of trunk or branches. It is generally less prevalent on the American Linden than on some of the European lindens. The red-spider or mite may be injurious during dry summer weather. The lindens are favorite food plants of the Japanese beetle (*Popillia japonica*) and the tussock moth (*Hemerocampa leucostigma*).

The original upright tree was discovered by Bernard H. Slavin, Superintendent of Parks, Rochester, N. Y. Trees propagated from it are proving very worthwhile. While this variety has not been grown commercially, its possibilities are tremendous. It would prove to be a notable addition to the list of all lindens now used for street and ornamental planting.

(*To be continued*)

Southern Confab

(*Continued from page* 6)

4:30 Tree Problems in the National Forest: L. L. Bishop, Asst. Reg. Forester, U. S. Forest Service, Atlanta, Ga.

4:45 Florida State Parks: Mrs. Linwood Jeffreys, Florida Board of Forestry, Jacksonville, Fla.

Evening—Hotel Thomas

7:30 National Arborists' Association Closed Business Meeting

FRIDAY, FEBRUARY 21

Morning—University of Florida

9:00 Tree Preservation in the South: Norman Armstrong, Armstrong Inc., Camden, S. C.

9:15 Tree Problems of Virginia: H. M. Van Wormer, Richmond, Va.

9:30 Trees and the Landscape Architect: Carn Reid, Auxier Landscape Company, Fort Lauderdale, Fla.

9:45 Shade Tree Legislation: O. W. Spicer, F. A. Bartlett Tree Expert Company, Stamford, Conn.

10:00 Looking Toward the Future: James Sturrock, Boynton Nurseries, Palm Beach, Fla.

10:15 Soil Treatment for Shade Trees: A. Robert Thompson, Nat. Park Serv., U. S. Dept. of the Interior, Washington, D. C.

10:30 Excessive Use of Tree Fertilizers: Edward W. Higgins, Frost and Higgins, Arlington, Mass.

10:45 City Park Problems in Florida: J. Gerry Curtis, Supt. of Parks, Miami

11:00 What is an Arborist: W. O. Hollister, Davey Tree Expert Company, Kent, Ohio

11:15 Tree Moving Practices in the South: E. T. Halter, Island Landscape Co., Palm Beach, Fla.

11:30 Selling Tree Service: Vance I. Shield, Shield Shade Tree Specialists, Clayton, Mo.

11:45 The Problem of Line Clearance: Geo. D. Blair, Jackson, Mich.

12:00 Lunch at the University Cafeteria

Afternoon

1:30-5:30 Field Demonstration of the Latest Model Tree Service Equipment will be held on the Campus at the side of the Conference Bldg.

Evening—Hotel Thomas

7:30 Business Meeting of the Southern Shade Tree Conference

SATURDAY, FEBRUARY 22

Morning—University of Florida

9:00-11 Arborists' Clinic:
Questions and Answers on Leading Problems of the Day Regarding the Planting, Care and Preservation of Shade Trees. Twenty-four Members of the Faculty of the Southern Shade Tree Conference will answer all questions

11:00 Business Meeting of the Southern Shade Tree Conference

12:00 Lunch at Hotel Thomas

Afternoon

1:30 Cars leave for Deep Sea Fishing Trip off Palm Beach with President "Bob" Weakley

(All those wishing to make the fishing trip will please make reservations thru "Bob" Weakley, 631 38th St., West Palm Beach, not later than Saturday, February 15)

Urged to Return Street Tree Charts

The National Street Tree Survey being conducted by TREES is gaining more attention and interest with each passing month; however, collaborators who as yet have not returned their completed charts are urgently requested to do so in the near future.

The work of compiling the data from all of the charts in each section will be a lengthy task, and it is the earnest hope of the National Committee that a number of the master charts be published this year.

One of the most recent sections to get under way is Number 6. The chairman is Grant Bowen, Landscape Engineer, State Highway Commission, Salt Lake City, Utah. This section includes the States of Montana, Idaho, Wyoming, Colorado, Utah and Nevada. Mr. Bowen's vice-chairmen are functioning well and he promises early returns.

Chairman, Section 6

Grant R. Bowen,
Landscape Engineer,
State Highway Com.
Salt Lake City, Utah

An interesting observation to date shows that without exception and regardless of the part of the country from which the chart came, the American Elm leads all other trees. In fact, every chart of the 150-odd so far include this all-American favorite. *If you wish to participate, write to TREES.*

Those who have returned charts since last publication follow:

Arthur R. Groeser, Dept. of Parks, La Grange, Ill.
R. O. Burgert, Park Commissioner, and T. D. Durell, University of Kansas, Lawrence.
C. D. McGehee, Supt. of Parks, Lubbock, Tex.
M. I. Stutler, Pres. Park Commission, Clarksburg, W. Va.
A. H. Rogers and Frederick Van Orden, Park Dept., Garden City, N. Y.
G. H. Rester, State Park Dept., Bastrop, La.
Homer Fish, Supt. of Parks, Wheeling, W. Va.
F. C. Gilbert, City Forester, Royal Oak, Mich.
Gerard A. Pesez, City Forester, Glen Falls, N. Y.
Virgil B. Cooper, Park Dept., Battle Creek, Mich.
I. R. Ricklefs, Supt. of Parks, Salina, Kans.
Ralph H. Peck, Prof. of Forestry, University of Missouri, Columbia.
W. H. Warren, Supt. of Parks, Victoria, B. C.
Mrs. M. B. Kannowski, Supt. of Parks, Grand Forks, N. D.
E. A. Rundlett, Park Dept., Staten Island, N.Y.
Fay Hyland, Asst. Prof. of Botany, University of Maine, Orono.
Francis Blake, Park Com., Kansas City, Kans.
Richard D. Stevens and F. H. Vogel, Dept. of Horticulture and Forestry, University of Arkansas, Fayetteville.
Griggs Waring, City Forester, Milwaukee, Wis.
G. H. Stevens, Director of Parks and Recreation, Montreal, Wis.
M. G. Simonds, Park Supt. and City Forester, Green Bay, Wis.
Ludwig Baumann, City Forester, St. Louis, Mo.
C. H. Wells, City Engineer, Newark, Ohio.
O. W. Letson, Botanist, Dept. of Parks, Tulsa, Okla.
Wm. G. MacLean, Supt. of Parks, Joliet, Ill.
I. S. Horgen, Supt. of Parks, Wausau, Wis.

Elms in America

(*Continued from page* 8)

more injury to this tree than to most of the others.

This elm can always be distinguished from other European elms by the fact that the seed is in the middle of the fruit, the petioles are very short, the upper surface of the leaves is rough, and there is an absence of any corky ridges on the two-year branches. The specific name *glabra* comes from the fact that the branches are very smooth, not rough like most of the other elms.

There are a number of varieties which are being grown. The most popular is the Camperdown elm (*camperdowni*) which, when grafted on an upright stem, has a wealth of pendulous branches forming a globose head. Many such trees can be seen even in this country, forming natural arbors under which chairs and tables are placed. Another form (*pendula*) has rather horizontal branches with pendulous branchlets and grows into a low flat-topped tree. There is a fastigiate variety, called the Exeter elm (*exoniensis*, formerly *U. montana fastigiata*), with rather small, often wrinkled leaves, but with branches rigidly upright. One variety (*purpurea*) has leaves which are purple in color when they are young; another variety (*atropurpurea*) retains the color in the leaves for a longer period. A compact shrub with smaller leaves is the variety *monstrosa*. A lower growing bush is *nana*, which seldom grows over 6 feet tall. Sometimes this bush elm is grafted 6 feet up on the trunk of *U. glabra*, resulting in a dense, compact, round-headed tree. A curious, slow-growing form with leaves that are narrow and crinkled is called *crispa*—used sometimes not for its ornamental value but because of its queer foliage.

ASIATIC ELMS

Of this group, the elm which has caught the public fancy more than any other is the Siberian elm (*U. pumila*). This plant is a native of Korea and Manchuria, not China, although it is unfortunately misnamed the Chinese elm in many nursery catalogues. It was first sent to this country in 1905 by Professor J. G. Jack, of the Arnold Arboretum, and later was introduced in large quantities through the efforts of Frank N. Meyer of the U. S. Department of Agriculture. The name Dwarf Asiatic elm, given to the plant in the first edition of "Standardized Plant Names," is unfounded since it is a standard tree 75 feet tall—anything but dwarf. This vigorous growing tree has found much use in the drier areas of the mid-west, where it does better than most other trees. It withstands clipping very well and makes dense hedges and windbreaks when properly clipped.

But when we have noted its drought resistance and its fast growth, everything in its favor has been said. It is a weak-wooded tree, does not grow old gracefully, and if unpruned, becomes very loose and open. Where other trees are available for ornamental purposes, they should not be used. Reports are circulating of certain strains of this tree with good form and habit, which yield similar offspring when propagated asexually. I have seen several of these trees, which, when young, admittedly make nice specimens; but it is questionable that they will maintain their good habit as they grow older. For dry soil planting, especially in the dry areas of the West, or for a quick screen which later may be replaced with one more permanent, this tree is admirable; but as a permament specimen in areas where other trees are available, it is not to be desired.

An elm frequently confused with *U. pumila* is the true Chinese elm (*U. parvifolia*), native of northern and central China, Korea and Japan. Like *U. pumila* it has small leaves, 1 to 2 inches long. There are several ways in which it differs from the taller growing Siberian elm, however. The true Chinese elm is a small tree, usually under 50 feet in height. It has thin scaling bark, and a round-topped crown. It bears its flowers in the fall, *U. pumila* in the spring. Usually, like the other elms, its autumn foliage is bright yellow, but two of the trees in the Arboretum have a bright red autumn color. It has been noted in the Japanese beetle area around Philadelphia, Pennsylvania, that where these two species were growing side by side, the beetles would practically defoliate *U. pumila* and scarcely touch *U. parvifolia*—an interesting observation well worth further investigation.

The Japanese elm (*U. japonica*) has long been a tree of importance to the Ainu, the aboriginal people of Japan. Many of these people believed that this was the first tree created, sent directly

(*Continued on page* 16)

THE *City Arborists'* CORNER

CITY LINE CLEARING

By CARL FENNER

Assistant City Forester
Lansing, Michigan

We believe that we have found a practical solution to the ever-present problem of telephone and electric power wire line clearance inside corporate limits of cities supporting tree care departments. For ten years our Lansing City Forestry Department has handled all electric line clearing work at the expense of the owners of the wires. Each year from one to three 6-man crews are employed from April to August systematically going over about half of the lines in the city. Enough clearance is given to last two seasons, thus all lines are cleared of the interfering branches at least once in two years. Beginning in 1940, all telephone lines and cables were taken care of in the same manner.

Many advantages of this system over the old system of clearance by linemen are apparent. A higher grade, more uniform job can be accomplished by the especially trained men. The foreman being a regular department employee, is conversant with the all important details of getting sufficient clearance to protect the wires from abrasion and simultaneously preserving the health and symmetry of the trees. He is also familiar with the growth rates and habits of the various species and therefore is in position to plan future line clearing work. We often find several block-long spans of wires that should be raised or side-armed before the next pruning two years hence. This information is passed on to the owners of the wires who thus have plenty of time to make plans and accomplish the work of changing location, raising wires or otherwise solving the problem of future interference. Almost daily contact between forestry foremen and wire line engineers is made to allow opportunity for minor changes and adjustments. In many instances branches and telephone cables can be pulled apart and

(*Continued on page* 17)

Tree Troubles

Control of Cedar Rust with Sodium Dinitrocresylate

The possibilities of controlling cedar rust on both the juniperus and pomaceous hosts by this method appear good. If viable spores are not formed by the galls on the junipers the pomaceous hosts cannot be infected. This breaks the life cycle of the rust and the junipers will not be reinfected since spores formed on the pomaceous hosts are necessary to infect junipers. The note follows:

"Sodium dinitrocresylate (Elgetol), applied as a single spray on May 8 to a group of red cedar trees and on May 16 to another group when rust galls were showing signs of activity, inhibited telial column extension and teliospore germination from rust galls of Gymnosporangium globosum, and G. Juniperi—virginianae, on red cedar, Juniperus virginiana and its varieties, and Gymnosporangium clavipes, and G. clavariaeforme on the dwarf juniper, J. communis.

"A 1 per cent solution of Elgetol regular was most effective. Weaker strengths did not penetrate so deeply and allowed some later extension of telia. An exceptionally thorough spraying was necessary for positive results.

"No injury to foliage was apparent after 58 and 60 days, respectively, on any of the red cedar trees, but a trace of injury was discernible on some of the badly infected dwarf junipers. Twenty-six red cedar trees and 10 clumps of dwarf junipers were used in the tests. Several hundred nonsprayed trees served as controls."—*Forrest C. Strong and Donald Cation, Mich. State College, East Lansing, Mich. Phytopathology* 30: 983. 1940.

Relation of Vessel Length at Infection Points to Extent of Vascular Invasion in American Elm by *Ceratostomella ulmi*

Vessel length at various points in American elm stems was determined in June by injecting spores of *Ceratostomella ulmi* one hour before felling the trees and, later, examining for vascular discoloration induced by the injected spores. Vessels found in new shoots were only a few centimeters long. Vessels in the bole frequently were many meters long. The maximum length of vessels found in the stem increased or diminished as the injection point varied between these limits. The extent of vascular invasion, which developed by the end of the season from June infections at various points in standing trees, was markedly conditioned by vessel length at the point of treatment. Spores injected one to four inches from the apex of new shoots produced no disease symptoms; after two years, invasion therein averaged 8.7 inches. Infections in the center of the one-year leaders or in crotches formed at the apex thereof induced extensiv vascular invasion in 6 pr cn of 323 treatments; in 20 per cent of 347 comparable treatments in two-year stems. All treatments in the bole induced extensive vascular invasion. Invasion was limited to several feet in trees 60 feet high, girdled every five feet, injected at stump height in June and left standing all season.—*W. M. Banfield.*

The Role of Tree Injection in the Control of Bleeding Canker of Hardwoods

Discovery of beech, elm and at least two species of oak (*Q. rubra* and *Q. agrifolia*) infected with bleeding canker, previously reported only on maple trees, has increased its importance. Confirmed diseased trees are present at various points in New England, on Long Island (N. Y.), and near Los Angeles (Calif.) A method of internal medication for checking the injury caused by this vascular pathogen will be demonstrated with Kodachrome motion pictures. "Heloine orange," a proprietary basic yellow dye plus a penetrant, has been found *in vitro* to inhibit the growth of *Phytophthora cactorum* and other pathogenic fungi and to inactivate the toxin formed by them. In 1939 and 1940 over 349 confirmed diseased maple and 11 beech trees in the field were injected and 85.4 per cent of these have failed to yield the pathogen, have inactive cankers, and are forming callus tissue. Studies on the relationship of the point of injection, dosage, and the distribution of the chemical in the tree have shown that infected vascular and cambial tissues can be adequately reached. Evidence supports the theory that the chemical checks tree decline by inhibiting the fungus, and by neutralizing the mycotoxin, thus preventing wilting, decreasing browning of leaf margins and bud tips, and promoting greener leaves.—*Frank L. Howard and Nestor E. Caroselli.*

Treating Chlorotic Pin Oaks by Trunk Injections and Soil Treatments

Inserting collodion capsules containing ferric phosphate in holes bored into trunks of chlorotic pin oaks restored normal green color to foliage and increased twig growth within a few months after treatment. The trees were growing along streets in Newark, New Jersey, in an area underlaid with ashes and other refuse, the entire area having previously been a dump. Five grams of ferric phosphate per inch-diameter of the trunk were used. The number of holes (one-half inch diameter) varied from one to four per tree, depending on trunk diameter. The chemical was inserted on April 24, 1940, when the trees were still dormant. The holes were plugged with grafting wax. Besides adequate control trees, the tests included soil treatments. A 3 to 5-lb. mixture of powdered sulphur, aluminum sulphate and ferrous sulphate (ratio of ½-¼-¼ per lb.) was placed in holes around the trees according to standard fertilizing procedure for shade trees. Three months later, the leaves of most trees treated by trunk injections with ferric phosphate were normal-green, whereas nearby non-treated trees showed severe chlorosis, as in previous years. Trees receiving soil treatments showed considerable improvement in leaf color and twig growth over non-treated trees but were less healthy than those receiving trunk injections. In all, more than 30 trees varying from two to eight inches DBH were involved in the tests.—*P. P. Pirone.*

Transmission of the Planetree *Ceratostomella* in Asphalt Wound Dressings

Field observations on cases on the Ceratostomella canker and wood-stain disease of sycamore, in which infection obviously began at pruning wounds treated with asphalt paints, indicated that the latter probably were not antiseptic and might transmit the fungus. Arborists, for practical reasons, so handle their paint cans and brushes that sawdust and bark fragments are carried by them from wound to wound. Agar-plate tests of the survival of the fungus in wound dressings were made, the inoculum being infected sawdust. The results were positive for a number of the popular asphalt type. Two kinds of dressings that prevented growth of the fungus were found to be toxic to sycamore cambium. Experimental applications of 12 brands of wound dressings containing Ceratostomella - infected sawdust were made to pruning wounds on London planes. Infections occurred with seven asphalt dressings, the percentage of treated wounds developing the disease varying from 36 to 100. This information suggests the need for antiseptic wound dressings that are non-injurious to cambium. Further study of the problem, involving tests of the effects of fungicides added to asphalt paints, is in progress. The planetree-disease demonstration includes materials illustrating survival and transmission of the fungus in asphalt dressings.—*Jas. M. Walter and Paul V. Mook.*

Susceptibility of *Planera* and Several Elm Species to *Ceratostomella ulmi*

The susceptibility of several species and varieties of elm to *Ceratostomella ulmi* was tested in 1940. Results, based on dieback of the main leader at the end of the growing season, showed *Ulmus laevis, U. procera, U. japonica* and the "Mormon elm" less susceptible than *U. americana* and *U. foliacea; U. foliacea* var, *Christine Buisman*, highly resistant; and *U. pumila* and its varieties *pinnato-ramosa* and *arborea*, slightly susceptible. Three trees of the water elm, *Planera aquatica*, a new host genus for *C. ulmi*, developed pronounced wilt and considerable dieback shortly after inoculation with *C. ulmi.*—*By S. J. Smucker.*

SEPTORIA LEAF SPOT OF FLOWERING DOGWOOD

Following the rainy spell of last July numerous dogwood specimens showing this disease were received from New Jersey, Maryland and Washington, D. C. One of the individuals submitting specimens noted that in a large planting of flowering dogwood and its red variety (rubra) the white-flowered group only was susceptible to the leaf spot.

The first symptom of the disease is the appearance of small angular spots 2-4 mm. in diameter on the leaves. On the upper surface of the leaf the spots are gray with a wide purplish-black margin. On the lower leaf surface the spots are light to dark brown. During prolonged rainy spells these spots may enlarge and coalesce, forming large discolored areas. In some cases severe defoliation soon follows.

Septoria leaf spot of the flowering dogwood (*Cornus florida*) is caused by the fungus *Septoria cornicola* Desmz.

CONTROL OF SEPTORIA LEAF SPOT

The fungus *Septoria cornicola* overwinters in the spore stage on the fallen infected leaves. These leaves should be gathered and burned in the fall in order to reduce to a minimum the supply of inoculum for the following spring.

Preventive sprays should be applied to supplement the previous sanitation measures. Either copper or sulfur sprays will control this disease effectively. Three sprays applied at two-week intervals, beginning when the leaves have fully expanded, supplemented by additional applications during prolonged cloudy or rainy spells, should suffice to keep this disease in check. Certain sulfur sprays, such as lime sulfur, should not be used near buildings since they react with paint, causing a permanent staining.

Trees that have been defoliated by attacks of the leaf spot fungus for several consecutive years may be seriously weakened. A heavy, late fall or early spring application of a complete tree fertilizer 10-8-6 will help to restore such trees to their former vigor.—*Thomas R. Bender, Nursery Disease Notes.*

Elms in America

(*Continued from page* 14)

from heaven in full growth. In their lives this tree has played a major part. Fire has been made by rubbing its dry roots together. When the inner bark of the tree was mashed and mixed with water, it was woven into a cloth from which wearing apparel was made. The outer bark was used in the roofing of

Belgian Elm (*U. hollandica belgica*)
Courtesy Arnold Arboretum

houses and as covering for the outside (and the inside) walls. The Japanese elm is a handsome tree with good dark green foliage. It is as important ornamentally as the Scotch elm because of its similarity in general appearance. In the collection at the Arnold Arboretum, it is susceptible to only a very slight infestation of the elm leaf miner and the elm leaf beetle.

The fourth and last Asiatic elm, Manchurian elm (*U. laciniata*) is of little importance commercially simply because it does not have a good habit of growth. All the trees in the collection at the Arboretum have a fan-shaped habit of branching, with a correspondingly rounded head, but the leaves are borne only at the tip of the long branches, which have very few side shoots. This plant has been offered in a few American nurseries but might well be replaced by some of the better elms.

EUROPEAN ELMS

There are three elm species which, strictly speaking, are native of Europe only. They are the English elm (*U. procera,* formerly called *U. campestris*), the Russian elm (*U. laevis*), and the lock elm (*U. ploti*). Characteristic of the European elms as a group is the fact that they all assume their autumn color later in the fall than do the native American elms.

Of the three, the English elm is by far the most important in America. Many of these trees were planted in Massachusetts in the eighteenth century and since that time have been continually used as street trees and specimens throughout the East. E. H. Wilson strongly recommended this tree for city planting for he claimed that it withstood the smoke and obnoxious gases of the city better than any of the other elms, the American elm included. It does not have the queenly arching habit of the American elm, but it does have a grace and beauty all its own with its numerous ascending and spreading branches. It has also been noted that in good seasons the leaves remain green several weeks longer than do those of the American elm. Unfortunately, it is most susceptible to attacks from the elm leaf miner and from the elm leaf beetle. (Here in Massachusetts this summer these pests were unusually bad, due to a long wet spell, and trees which had not been sprayed were practically defoliated by the end of July. Although many other elms, including the American elm, were victims this season, the English elm suffered particularly.)

Several varieties of the English elm are known, but none of them are grown in quantity by American nurseries. The variety *vanhouttei* has leaves tinged with yellow, and *aurea* actually has yellow leaves. Variety *purpurascens* has purplish leaves, and another variety, *marginata,* has leaves with a creamy-white margin. One form, *australis,* has leaves that are much thicker and firmer than those of the species. Perhaps the best variety ornamentally is one called *myrtifolia,* which has the smallest leaves of any of the elms —scarcely one inch long.

The European white elm or Russian elm (*U. laevis,* formerly *U. pedunculata*) is common in some parts of the Scandinavian Peninsula and in Russia. It is very close in size and shape to our own native American elm and is as hardy. However, it differs because it has a much thicker coating of tomentum on the undersurface of the leaves, and longer, more sharply pointed buds. In England it grows better than the American elm. It is probably rare in American collections, but makes an excellent specimen.

Another European species is the East-Anglian or Lock elm, *U. ploti.* The name lock elm has been given to it in England where its tough wood makes working with saw or plane very difficult. This tall growing tree, which reaches a height of 80-90 feet, is closely allied to the Scotch elm. It is rarely found in American collections.

The last elm species to be mentioned is a hybrid, *U. hollandica,* a number of varieties of which apparently are hybrids of *U. glabra* and *U. carpinifolia.* The variety which well might represent this group is known as variety major, or Dutch elm, which is a tree of over 100 feet with a short trunk, wide spreading branches, and lustrous dark green leaves. Other varieties have been planted to some extent in Europe as street trees, and a few have met with favor here in America. The Belgian elm, *U. hollandica belgica,* is a tall, rough-barked tree with a straight trunk. Younger trees are dense and pyramidal in habit while older ones may be more or less cylindrical. Trees of this variety in the Arnold Arboretum are apparently somewhat more hardy than typical *U. hollandica major.* The Klemmer elm (var. "klemmer") has smooth bark, tall ascending branches, and a narrow pyramidal habit of growth. It originated in Belgium where it is planted a great deal. The Huntington elm (*vegeta*) has been used in America and is valued for its tall growth, its forked trunk and its rough bark. It originated about 1750. A narrow pyramidal variety with smooth bark is *superba,* and still another variety, *pendula,* originating in England about 1830, has ascending branches but pendulous branchlets.

The elms, at least in the eastern part of the United States, are seriously threatened by the Dutch elm disease, about which every tree lover has read much. It is not my purpose to discuss this dis-

(*Continued on next page*)

ease or its possibilities, but I do want to plead the cause of the elms. I believe that we should not stop planting elms simply because they may be subject to this disease. It is true that there are many other trees we can use in street tree planting, but none can compare with the American elm, and few have the distinctive forms characteristic of some of the varieties of the European elms. It is also true that they must be sprayed with lead arsenate for the elm leaf beetle. In very restricted areas around New York City, it may be advisable to discontinue the planting of elms, at least for the time being. However, I think the elms should be held in just as high regard as they always have been and that even here in New England, though it is adjacent to the Dutch elm disease area, we should continue to plant elms until that disease shows more pronounced signs of rapid spreading.

Elm Species and Varieties More or Less Commonly Planted in America

A	alata	Winged Elm
A	americana	American Elm
	ascendens	
	columnaris	
	"Lake City"	Lake City Elm
	"Moline"	Moline Elm
	pendula	Weeping American Elm
	"Princeton"	Princeton Elm
E, a	carpinifolia (*U. foliacea, U. nitens*)	Smooth-leaf Elm
	cornubiensis (*U. stricta*)	Cornish Elm
	dampieri	Dampier Elm
	koopmanni	
	pendula	Weeping Smoothleaf Elm
	propendens	
	sarniensis (*U. foliacea wheatleyi*)	Wheatley Elm
	suberosa	Corkbark Elm
	umbraculifera	Globe Elm
	variegata	Tartan Elm
	webbiana	
	wredi	Wrede Elm
A	crassifolia	Cedar Elm
A	fulva	Slippery Elm
E, a	glabra (*U. montana, U. scabra*)	Wych or Scotch Elm
	atropurpurea	Purpleleaf Scotch Elm
	camperdowni	Camperdown Elm
	crispa	Fernleaf Elm
	exoniensis (*U. montana fastigiata*)	Exeter Elm
	constrosa	
	nana	Bush Elm
	pendula (*U. montana horizontalis*)	Tabletop Elm
	purpurea	
x	hollandica	Holland Elm
	belgica (*U. belgica*)	Belgian Elm
	Klemmer	Klemmer Elm
	major	Dutch Elm
	pendula	Downton Elm
	superba	Blanford Elm
	vegeta (*U. vegeta*)	Huntington Elm
a	japonica	Japanese Elm
a	laciniata	Manchurian Elm
E	laevis (*U. pedunculata*)	Russian Elm
a	parvifolia	Chinese Elm
E	procera (*U. campestris*)	English Elm
	aurea	
	australis	
	marginata	
	myrtifolia	
	purpurascens	Purpleleaf English Elm
	vanhouttei	Vanhoutti Elm
	viminalis	Willow Elm
E	ploti (*U. minor*)	Lock Elm
a	pumila	Siberian Elm
A	serotina	Red Elm
A	thomasi (*U. racemosa*)	Rock Elm

A—native in the United States
a—native in Asia
E—native in Europe
x—hybrid origin

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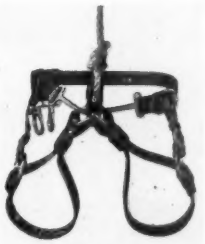

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City Arborists' Corner

(*Continued from page* 14)

fastened by small "pull off" cables to poles, tree trunks, etc.

The wire line owners are well pleased with the arrangement and would not go back to the old system. Their electric and communication service is improved and suffers less interruption than formerly. Charges sufficient to cover wages, equipment, insurance, brush truck, wound dressing, etc., are made, and still money is saved for the line companies because of the fact that tree workers are usually paid lower rates than linemen.

A most pleasing part of the arrangement from the municipality's viewpoint is the resultant improvement in public relations possibilities. The property owners appreciate the fact that the necessary tree pruning is being done by the tree men rather than linemen. They feel that their interest in the trees is being protected, as well as improved service in electric transmission and telephone communication being made possible. Everybody happy.

Authors and Books

The following books may be ordered from TREES Magazine, Box 886, Santa Monica, California.

MAINTENANCE OF SHADE AND ORNAMENTAL TREES, by P. P. Pirone. Oxford University Press, New York. Approx. price $4.00 (available soon).

The book, in two parts, considers the everyday problems with which the tree owner or the person entrusted with the care of trees is confronted. Chapter headings, Part 1: *Introduction; The Normal Tree; The Soil and Its Relation to Trees; Transplanting Trees; Fertilizers and Their Use; Pruning Trees and Treating Wounds; Cavity Treatments; Bracing and Cabling; Trees Suitable For Street and Roadsides.* Chapter headings, Part 2: *Diagnosing Tree Troubles; Non-Parasitic Injuries; Insect Control; Spraying Equipment and Practices; Tree Diseases and Their Control; General Parasitic Diseases; Diseases and Insect Pests of Street and Roadside Trees; Diseases and Insect Pests of Deciduous Ornamental Trees and Some Shrubs; Diseases and Insect Prests of Evergreen Trees and Some Shrubs.*

This book is not merely a comprehensive compilation of the latest information of all phases of tree care, but includes original work and observations by the author. It will have about 300 pages of text and nearly 200 original photographs and line drawings to illustrate the various tree troubles.

POEMS OF TREES. A Sidney Lanier Memorial. Vol. VIII, compiled and edited by Wightman F. Melton. Curtiss Publishing Co., Inc., Atlanta, Ga. 297 pp. $2.00.

To any one who loves poetry and particularly of trees, here is a treasure house. Contains hundreds of beautiful poems on trees in autumn, trees in winter, summer—in groups. Beautifully bound. Should be in all libraries.

PLANT GALLS AND GALL MAKERS, by Ephraim Porter Felt. Comstock Publishing Co., Inc., Ithaca, N. Y. 364 pp. illus. $4.00.

Another valuable contribution to the literature of trees by Dr. Felt. The text does not attempt to discuss control measures, but is intended solely as a guide for identification of nearly 2,000 plant galls. An invaluable reference for libraries and schools.

HOME FLORICULTURE IN CALIFORNIA, Circular 53. H. M. Butterfield, University of California, Berkeley, Calif. 199 pp.

A revision of the 1931 edition. Not only useful to the home owner, but many professionals should profit much from its wealth of information.

IMPORTANT TREE PESTS OF THE NORTHEAST, edited by Committee on Forest Protection Leaflets, New England Section, Society of American Foresters. Published by the Massachusetts Forest & Park Association, 3 Joy St., Boston, Mass. 195 pp. $1.00.

A compilation and revision of Tree Pest Leaflets 1-50. This is a splendid handbook extremely valuable to all who work with trees, not only in the Northeast, but in the East generally. Beautifully printed, profusely illustrated. The subjects covered are: Sucking Insects; Leaf-eating Insects; Borers and Weevils; Leaf Diseases; Bark and Stem Cankers; Diseases of Sap Stream and Rots; and Miscellaneous. About thirty different authors.

NATIONAL SHADE TREE CONFERENCE, Proceedings 16th Annual Meeting, Detroit, Michigan, August 1940. Edited by Paul E. Tilford. 202 pp. $3.00. Obtain from Dr. L. C. Chadwick, Ohio State University, Columbus, Ohio.

As usual, the Proceedings carries the papers and discussions of the annual meeting. The information contained is the most advanced in the field of Arboriculture. A complete file of these references should be in every Arborist's library as well as in every Park department.

An Easy Way to Make An Accurate Tree-Ring Record

By Dr. Edward E. Wildman

Materials

A few feet of adding machine paper, or other strips of white paper about two inches wide; a red or blue marking pencil; a few thumb tacks, and, if there are saw marks on the stump, or long-end, a piece of sandpaper.

Procedure

Across the smooth surface of the stump, or log-end, lay the strip of paper so that it crosses the center, or youngest rings of the tree and goes from bark to bark. Pin it there with thumb tacks along the margins. Now, with the pencil, rub the paper lightly along its whole length over a strip about an inch wide.

Result

This should give you a clear record of each ring and those which grew in dry years will be clearly evident, because they will be much narrower than the rest.

Now label the last ring that grew with its year. Count back 10 years and label each tenth year to the center (use even decades after the ring made in 1930, say).

Thus you learn the exact age of your specimen and can date the driest years. In addition, this interesting tree record of the weather can be traced much farther back by making such paper records on the smoothed ends of timbers used in our oldest buildings. These should be labelled with the year the building was erected. All records should be clearly labelled with the name of the sender, the date, the kind and location of the tree, if possible.—*The Tree-Ring Log.*

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A note in the margin of this page will bring full information.

- ☐ Trailer.
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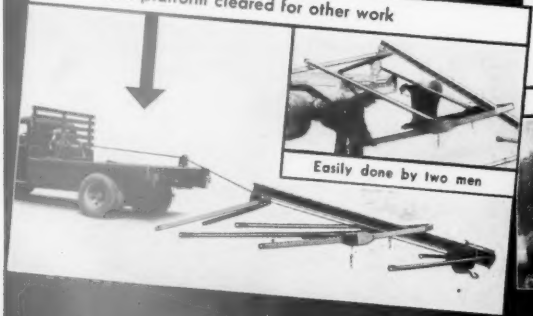

Easily done by two men

RACK SIDES CAN BE CARRIED WITH OR WITHOUT TREE-MOVING CRANE UNIT IN PLACE (*see inset*)

● **Users are enthusiastic about the new Gar Wood "Q-D" (quick-detachable) Tree-Moving Crane Unit which can be erected or removed in ten minutes. This all-purpose, body-and-crane combination is designed for the 1½-ton truck of approximately 157″ wheelbase. With crane in place, tree balls up to six feet in diameter and three tons in weight are quickly picked up, transported and reset. When the tree crane is removed, platform is left clear with winch in place for other work. When the crane is off (and with racks on) operators find it desirable to place a partition behind the winch to provide a boxed space on the platform to carry shrubs and loam or other loose materials.**

The Tree-Moving Crane Unit has many other uses. Monument manufacturers, scale testers and machinery movers say it is a time and money saver.

The "Q-D" Tree-Moving Crane was invented by tree experts. Gar Wood Industries, Inc., obtained the exclusive right to manufacture and sell this modern, patented, tree-moving crane unit, from the co-inventors Paul H. and James A. Davey, both associated with the well-known Davey Tree Expert Company, Kent, Ohio.

Write or ask for illustrated and descriptive literature.

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